Project Summary

Project Goal

Vigorous riparian vegetation is essential for proper stream functioning, yet little is known about how current conditions in headwater streams of the Sierra Nevada compare to historic, pre-Gold Rush Era conditions. Has fire suppression in surrounding upland areas resulted in increased shading and decreased vigor of riparian plants, and concomitant alteration in water quality and stream invertebrates? Our project has four goals:

• Determine reference fire regimes to aid in restoration of forests adjacent to stream zones in the basin of the upper North Fork of the American River.

• Use historical reconstructions of stands in riparian areas to estimate pre-1865 light environment in riparian zones.

• Document current riparian vegetation in headwater streams with respect to elevation, light, and overstory canopy cover and species, and determine light-growth response.

• Describe aquatic macroinvertebrate communities with respect to elevation, riparian vegetation and light, stream water quality, periphyton, and substrate condition.

Project Scope

The work will involve two years of field research: field technicians will take measurements on tree burn scars, ages of large trees, composition of riparian vegetation, fine sediment loading, water temperature, aquatic invertebrate communities, and periphyton. Work will take place within the US Forest Service's Onion Creek Experimental Forest (3000 ac), along headwater streams that cross the ecotone between upper and lower montane vegetation zones. The work will contribute to the SNC-funded SWEEP project on silviculture for enhanced water delivery, by providing data on riparian condition in watersheds that may be used for silvicultural research. Major work products are reports on 1) historic and current fire regime in stream zones, 2) historic and current light environment and vegetation in riparian zones, and 3) aquatic invertebrate communities and stream conditions. Communication of findings will occur via project website, public lectures, publication in technical journals, and a synthesis paper targeted at landowners and managers. In-kind resources for project completion include donation of salaried time from one of the project investigators.

Letters of Support

Joanne Roubique, US Forest Service District Ranger, Tahoe National Forest, Truckee District.
Dr. Ted Beedy, property owner near Onion Creek Experimental Forest.

Project Deliverables and Schedule

Deliverable	**Timeline**
Report on 1st and 2nd field season activities	Oct 2009, 2010
Preliminary analysis of data from 1st and 2nd seasons	April 2010, 2011
Establish project website	June 2009
Present lecture on riparian & stream condition in headwater zones (3 venues)	April 2010, 2011
Report on historic fire regime in riparian zones	April 2010
Report on historic riparian zone light environment	April 2011
Report on current riparian vegetation and light	April 2011
Report on stream biota and water quality	April 2011

SNC Project Costs

PROJECT BUDGET CATEGORIES	**TOTAL SNC FUNDING**
Staff	**$ 165 100**
Equipment and Analytic Services	**$ 31 200**
Travel	**$ 7 100**
Printing and Website	**$ 1 000**
Overhead (13% of subtotal)	**$ 26 600**
SNC Grant Total	**$ 231 000**